

We Claim:

1. A cutting tool insert comprising a substrate and a coating wherein the coating comprises one or more layers of refractory compounds of which at least one 5 layer comprises a precipitation hardened  $(\text{Ti}_y\text{Al}_x\text{Me}_{1-x-y})\text{N}$  based layer, where Me is one of the element Zr, Hf, V, Nb, Ta, Cr, Mo, W or Si, and wherein:
  - x is between 0.50 and 0.80;
  - a ratio,  $R=x/(x+y)$ , is between 0.50 and 0.85;
  - a sum of Ti and Al subscripts,  $S=x+y$ , is between 0.7 and 1.0;
  - 10 a ratio of the peak width,  $F_{10/90}$ , FW10%M or FW90%M meaning Full Width at 10% and 90% of the maximum peak value reduced with the background, measured using X-ray diffraction with Cu  $\text{K}\alpha$  radiation of the 200 peak at approximately  $43^\circ 2\theta$  of the  $(\text{Ti}_y\text{Al}_x\text{Me}_{1-x-y})\text{N}$  coating is higher than 7.5;
  - a ratio between the area of the h-AlN (100) peak at approximately  $33^\circ 2\theta$  15 ( $=A(\text{h-AlN})_{100}$ ) and the c-( $\text{Ti}_y\text{Al}_x\text{Me}_{1-x-y})\text{N}$  (200) peak at approximately  $43^\circ 2\theta$  ( $=A(\text{c-(Ti,Al,Me)N})_{200}$ ) called K, wherein  $K=A(\text{h-AlN})_{100}/A(\text{c-(Ti,Al,Me)N})_{200}$ , and K is between 0 and 0.3; and
  - the layer has a single  $(\text{Ti}_y\text{Al}_x\text{Me}_{1-x-y})\text{N}$  (200) peak.
- 20 2. The cutting tool insert according to claim 1 wherein:
  - x is between 0.55 and 0.70;
  - the ratio,  $R=x/(x+y)$ , is between 0.55 and 0.75;
  - the sum of Ti and Al subscripts,  $S=x+y$ , is between 0.8 and 1.0; and
  - the  $F_{10/90}$  value is higher than 8.
- 25 3. The cutting tool according to claim 2, wherein:
  - x is between 0.60 and 0.70;
  - the ratio,  $R=x/(x+y)$ , is between 0.60 and 0.75;
  - the  $F_{10/90}$  is higher than 9; and
  - 30 K is between 0 and 0.2.

4. The cutting tool according to claim 1, wherein  $x+y=1$ .
5. The cutting tool according to claim 1, wherein  $x+y<1$ .
6. The cutting tool according to claim 5, wherein  $Me= V, Zr, Ta, Nb, Si$ , or Cr.
7. The cutting tool according to claim 6, wherein  $Me= Zr$ , or  $Nb$ .
- 10 8. The cutting tool according to claim 1, wherein the layer is deposited by PVD and the precipitates are obtained by a spinodal decomposition of the cubic  $(Ti_yAl_xMe_{1-x-y})N$  layer.
- 15 9. The cutting tool according to claim 1, wherein the precipitates comprise nano-meter sized cubic TiN (c-TiN) and cubic AlN (c-AlN) and/or hexagonal AlN (h-AlN).